Features

Picture this

Some human populations in south-east Asia have foraged for a living in shallow coastal waters for generations. Could their eyes have adapted to these challenging conditions? **Nigel Williams** reports on a recent study.

Land-living humans naturally reach for their goggles when they go swimming. Their eyes are adapted for vision through the medium of air and opening them underwater, as every swimmer knows, reveals a debilitating fuzzy scene.

But new research reported in this issue suggests that some human eyes are able to cope much better with the underwater fuzziness than Western landlubbers. Sea gypsies have existed for thousands of years in parts of south-east Asia on the basis of their abilities to forage for shells, clams and sea cucumbers as a source of food or income.

Researchers from the University of Lund and Moelndal in Sweden have been studying the underwater visual abilities of several children from the Moken tribe of sea gypsies, which live along the coast of Myanmar and western Thailand, compared with a group of Western children on holiday in the same region.

The team created an apparatus that allowed them to examine patterns at different resolutions underwater. The results showed that the Moken children had significantly better underwater acuity than the European children and that they could resolve features twice as fine. The Moken children also showed greater sensitivity in detecting contrasts.

So how did the Moken children achieve these results? On land they showed no difference to their European counterparts. The team describe how a reduced pupil size underwater can significantly improve resolution and that the Moken children showed significantly smaller pupil size underwater.

The authors suggest that the Moken children may learn how to contract their pupil size and accommodate their vision underwater in a way that European children could not. But they also consider that sea gypsies have pursued their lifestyle for thousands of years and that evolution may have favoured those who had intrinsically better underwater accommodation powers.

Whatever the cause, the authors argue, this ability in these sea gypsy people is clearly an adaptive strategy that supports this remarkable and distinctive seaside lifestyle.

See worthy: Most humans find that it is extremely difficult to get anything other than a distinctly blurred image when they open their eyes underwater but new results suggest that the foraging activities of sea gypsies, such as the Moken of south-east Asia shown here, have led to an enhanced visual ability underwater.